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made the five great destroyers, — Yeitso, Tsinahale, Delgeth, Tseta-holtsil-tahli, and Binaye. She also took to rear a foundling girl, Estsanatlehi. The latter, impregnated by the sun, brought forth twins, who, by the aid of their father, slay the five great destroyers of mankind. The stories of these Herculean labors is charmingly told, and is full of theories about the causes of familiar things, such as the birds, the shunning of a mother-in-law. The mother of the giants repopled the world, built pueblos, established the gentes. The giants may still be seen in the waters of the San Juan, and the mother continues to send to the Navajos the snow, the spring thaw, the soft rain, the corn, and the green grass. — (*Amer. antiq.*, v. 207-224.) J. W. P. [468]

EARLY INSTITUTIONS.

A history of guilds. — A Mr. Waterford, barrister-at-law, is writing a history of English guilds. He has already described the aims and purposes of the guilds. He has also described their history, and the history of public opinion and legislation regarding them. He is now taking up their geographical distribution in the different counties and towns. Extracts are given from the records. The work promises to be one of interest and value. The history of trade unions is a subject which deserves especial attention in these days. It is a very difficult subject, however, and by no means mastered as yet. Contributions towards its elucidation are therefore very welcome. — (*Antiq. mag.*) D. W. R. [469]

The Merovingian grants of immunity. — These grants, a chief source of feudalism, are not considered by M. Fustel de Coulanges to have been confined to ecclesiastics, as is usually assumed. The grants to ecclesiastics were no doubt the most numerous, and the documents are at any rate better preserved; but lay proprietors received precisely the same powers. The essential feature of the grant he regards as the exclusion of the public officials from the territory of the immunity, whether for judicial, fiscal, or military purposes. Exemption from financial burdens was a natural but not necessary nor universal consequence. In this he agrees with Heusler, differing from him, however, in holding that the grantee was absolutely removed from all relation to the public official, the count, and stood only under the king; while Heusler considers that he only became an intermediary between his tenants and the count. The result of these grants was to completely break up the administrative system of the Frank empire by removing great stretches of territory from the authority of the public official, and practically to make the proprietor an irresponsible master over his free tenants as well as his serfs. The same effects followed the grants of *mundiburdium*, or protection, by which the proprietor entered into a purely personal relation to the king, ceasing to be under the authority of the count. This substitution of a personal relation for the political one of subject and ruler is also of the essence of feudalism. It is not possible to decide whether the grants of immunity or those of *mundiburdium* were the earlier. Immunity, however, applying primarily to the land,

necessarily included the personal relation; while *mundiburdium*, by an equal necessity, led to immunity. The article is written in the interesting style and with the characteristic lucidity of the author, and forms a most important contribution to the study of the origin of feudalism. — (*Rev. hist.*, July-October.) W. F. A. [470]

NOTES AND NEWS.

A CABLE despatch was received Nov. 30, at Harvard college observatory, announcing the discovery of a small planet by Palisa at Vienna. Its position Nov. 28, 13 h. 20 m., Greenwich time, was, right ascension, 3 h. 19 m. 14 s.; declination, north, $15^{\circ} 52' 17''$; daily motion in right ascension, $-48''$; in declination, nothing. It is of the twelfth magnitude. The planet was readily identified at Harvard college observatory, and was observed by Mr. Wendell as follows: Nov. 30, 9 h. 30 m., Cambridge time; right ascension, 3 h. 17 m. 27 s.; declination, north, $15^{\circ} 51.1'$.

— While the revenue steamer Corwin was cruising on the coast of Alaska and in the north-west Arctic Ocean in 1881, Dr. Irving C. Rosse, her medical officer, found leisure to prepare a series of medical and anthropological notes, which have just been published by the Treasury department. The medical notes, although they exhibit the mind of a keen observer, are rather technical than racial: there is a short chapter on medical and surgical subjects, however, p. 25. The author holds that the marks of distinction between the Eskimo and the Chukchi are not very plain. At Kotzebue Sound many of the natives are tall and of a commanding appearance. Uniformity of features, so commonly attributed to the Eskimo, has frequent exceptions; many of the natives exhibiting countenances of Chinese, Jewish, Milesian, or even Mulatto cast. The experiments of strength and agility in rowing, racing, throwing stones, and lifting, given on p. 29, are valuable contributions to anthropometry. The popular notion regarding the great appetite of the Eskimo is one of the current fallacies, according to Dr. Rosse. As to the commercial connection between the two continents, natives cross and recross Bering Strait to-day on the ice and in primitive skin canoes, which have not been improved since the days of prehistoric man. With a view to finding out whether any linguistic affinity existed between the Japanese and the Eskimo, Dr. Rosse caused several Japanese boys employed on the Corwin to talk on numerous occasions to the natives, both on the American and Asiatic coast; but in every instance they were unable to understand the Eskimo, and assured him that they could not detect a single word that bore any resemblance to words in their own language. The language varies greatly from point to point. The interpreter taken at St. Michaels could with difficulty understand the natives of Point Barrow, while at St. Lawrence Island and on the Asiatic side he could understand nothing at all. The author happily likens spoken languages to those species of animals which are still in a plastic condition and are undergoing farther development. The Eskimo tongue

is one of these, and yields with facility to almost any external influence.

Dr. Rosse speaks slightly and flippantly of philosophical studies, and holds that the observation of habits in satisfying the demands of nature is a surer guide to racial affinities. The dietetic value of seal, bear, walrus, eider-duck, whale, and reindeer, is discussed; and we are led to believe that the Eskimo are by no means to be pitied for their miserable food. Says Dr. Rosse, "We dined occasionally on fresh trout, young wild duck, and reindeer. . . . There is scarcely any better eating in the way of fish than Coregonus, and certainly no more dainty game than young wild geese and ptarmigan." The cranberries and a kind of kelp are the only vegetable food. Eggs in all states are eagerly devoured, though the women will not take gull's eggs. Game is both plentiful and very tame.

Courtship and marriage are exceedingly simple, parturition is easy, families are small, and mortality among the new-born excessive. The description of the carrying of infants and the plays of children exhibit in the author a genuine sympathy absolutely necessary in an observer of natural history. The personal ornamentations are chiefly tattooing and wearing labrets. The native has no music in his soul, although rare instances of acquired facility in singing and playing are recorded. He is a born dancer or jumper, however, mingling this pastime with all his feasts. Dr. Rosse speaks in the highest terms of the Eskimo art talent and of the facility shown by some in learning the art of the higher race. Of the intelligence of the race the author has a high opinion. In speaking of their crania, Dr. Rosse confirms the results of Dr. Kohlmann, that there is no fixed Eskimo cranial type. As to character, uncontaminated, they are models of truthfulness and honesty; but as to chastity, Herder was far from truth when he wrote, "The blood of man near the pole circulates slowly, the heart beats but languidly: consequently the married live chastely, the women almost require compulsion to take upon them the troubles of a married life."

Owing to his hard life, the conflict with his circumstances, and his want of foresight, the Eskimo soon becomes a physiological bankrupt: and, his stock of vitality being exhausted, his bodily remains are covered with stones, around which are placed wooden masks, and articles that have been useful to him during life; or they are covered with driftwood, and the weapons and personal effects placed near by, in response to the sentiment commemorated by Schiller in 'Bringet hier die letzten gaben.'

— The Ottawa microscopical society held a conversazione on Nov. 20, at which nearly three hundred invited guests were entertained by the president and members. The admirable arrangement of the rooms allowed of a varied programme. Microscopes of various makers and models, and of highest grade, were set out in the upper story of the building; while the lower hall was devoted to music, elocution, the oxy-hydrogen microscope, and the stereopticon. In the hands of the Rev. Dr. Ballaud, of the College of Ottawa, the gas-microscope and gas-lantern charmed

all by the novelty and brilliancy of the objects and views presented to them. The entertainment lasted nearly three hours, and a repetition is eagerly demanded.

The general meetings of the society will be held this winter on Dec. 18, Jan. 15, Feb. 19, and March 18, at eight P.M., in the offices of the Geological survey.

— In accordance with the vote passed at the public meeting of the Archaeological institute of America, reported in SCIENCE, No. 41, the Hon. Samuel C. Cobb and Messrs. Henry Lee, William Endicott, jun., Oliver W. Peabody, and John C. Phillips have been appointed a committee to solicit subscriptions for the publication of the report of the investigations at Assos and for the general work of the institute. Twenty thousand dollars are needed; and subscriptions may be sent to either of the members of the committee, or to Henry L. Higginson, Esq., treasurer of the institute, No. 44 State Street, Boston.

— At the third annual meeting of the Natural science association of Staten Island, held in the village hall, New Brighton, Nov. 10, Dr. A. L. Carroll was chosen president; Samuel Henshaw, treasurer; Charles W. Lang, recording secretary; Arthur Hollick, corresponding secretary; and W. T. Davis, curator. The society numbers seventy, and has a balance in the treasury. Objects of interest were exhibited at this meeting by seven members, and consisted very largely of specimens collected in the immediate vicinity, — the highest sign of activity.

— The editor of the *American monthly microscopical journal* announces that the office of publication will be removed to Washington with the beginning of 1884.

— The Russian academy of science held its centenary anniversary at St. Petersburg with much ceremony on the second of last month, under the presidency of Count Tolstoy, the Russian minister of the interior.

— The *Moniteur industrielle* announces that the International exhibition at Marseilles opened on the 15th of November, and remains open until April 31, 1884. The programme is extensive, and, on the whole, embraces much the same range of subjects as the London fisheries exhibition.

— After the electrical exhibition in Paris, a number of French electricians formed themselves into a club, which has met once a month for a dinner. From this small beginning there has developed an 'International society of electricians.' The society numbers more than nine hundred members from twenty nationalities. Information may be had from Georges Berger, 99 Rue de Grenelle, Paris.

— Mr. Charles A. Ashburner of the State geological survey is completing his surveys and examinations in Cameron, Elk, and Forest counties, Penn. Mr. Ashburner's report, to be accompanied by maps and sections, will be published late in the winter, and will contain much information of interest to the coal and oil operators in this section of the state.

— The next issue of the Library of aboriginal American literature, published by Dr. D. G. Brinton, Philadelphia, will be 'The comedy of Gueguence,'

a play written and acted by the natives of Nicaragua. It dates from the seventeenth century, and is written in a curious dialect, half Aztec and half Spanish. It will be ready early in December.

—An itinerary has been issued of the first part of the map of the route of the Alaska military reconnaissance of 1883 by Lieut. Schwatka. The total length of raft-journey on the Yukon River from Lake Lindeman to Nuklakayet was 1,303.2 miles, being the longest raft-journey in the interest of geographical science. He gives the length of the Yukon River as 2,043.5 miles.

—At the meeting of the Engineers' club of Philadelphia, Nov. 17, Mr. Edw. I. H. Howell presented a sketch of the practice and peculiarities of the English machinists with regard to machine-tools. He also exhibited specimens of polished shafting, from $1\frac{1}{8}$ " to $2\frac{3}{4}$ " in diameter, cold drawn, like wire. The secretary, Howard Murphy, read an illustrated paper by Mr. G. T. Gwilliam, upon the methods of making and placing the mattresses and fascines at the extension of the Delaware Breakwater harbor. The secretary presented notes, by Mr. John J. Hoopes, to illustrate methods of computing tables by successive additions instead of separate calculations. Mr. John Haug presented illustrated notes upon boiler construction, touching especially upon what should be shown in drawings and specifications for boilers. Mr. George S. Strong exhibited specimens of cylindrical and corrugated flues; the former readily yielded to the pressure of the fingers, while the latter was trampled upon without injury. The secretary read, for Mr. C. J. Hexamer, a description of his experiments upon, with a discussion of the causes of, dust-explosions in mills. Mr. William A. Ingham considered that some explosions in coal-mines are probably attributable to the immense quantity of fine dust in the air; and Mr. T. Mellon Rogers, in response to Mr. Hexamer's comments upon the general absence of adjustable rolls in Philadelphia mills being a common cause of ignition by the friction of foreign metallic particles in the stock, spoke of their general use in the west.

—The mathematical section of the Washington philosophical society has resumed its sessions. At the meeting held Nov. 21, Mr. C. H. Kummell discussed the theory of errors as practically tested by target-shooting, in which he showed the effect of a difference of precision in the vertical and horizontal directions, and of taking account of the lost shots on the formulæ employed.

—C. G. Stewart of St. Thomas's hospital, London, and Mr. G. Lathom Browne of the Midland circuit, have published the reports of various trials for murder by poisoning, from the trial of Tawell to that of Dr. Lamson. The book also gives directions for analysis, and points out difficulties that have occurred, or are likely to occur, in proving the presence of poison to a jury. The *Chemical news* considers the book "indispensable to all chemists who practise in toxicology, of great value to the medical profession generally, and doubtless no less so to solicitors and counsel who may be concerned in poisoning cases."

—The *Industrie-blätter* of Aug. 4 reports an ingenious fraud in jewelry. Thin plates of some precious stone, as for instance of emerald, have melted glass of the same color as the stone poured on one side. The real stone is set outside, so that, when tried, the jewel presents every appearance of being genuine and of the right hardness. These stones are called in the trade *pierres fines doublées*. The only test is to hold the stone edgewise, when, of course, the two sides will show different refraction. Any connoisseur will thus be able to detect the fraud; but, if set, this could hardly be done.

—The *Moniteur des fils et tissus* calls attention to a description of vegetable wool called kapoc. It comes from Java, and a specimen is on view at the Amsterdam exhibition. It arrives at Amsterdam in its leathery covering, being itself enveloped in the seeds. It is then freed from both, and is carded so as to make a very light mattress wool, worth about $8\frac{3}{4}$ d per pound. One of the houses engaged in this operation had made trials in spinning and dyeing this material; but the filaments are said to be like strings, and their industrial application consequently a matter of uncertainty.

—The *Industrie zeitung* gives a description of the source of the much advertised Hunyadi Janos water. Fourteen springs rise in a marsh near the town of Ofen in Hungary, which is the property of Herr A. Saxlehnes of Budapesth. Four of the strongest springs flow into a cement-lined cistern, whence the water is pumped into a second reservoir and cleared, then passed through other purifying-vessels, until it is bottled by an ingenious arrangement, ten bottles being filled at once. The yearly sale amounts to about three million bottles.

—Caillaud communicates to the Geographical society of Paris some statements in regard to a plant of the strychnine family, native to Tonquin, to which remarkable virtues are ascribed. It is called by the Annamites, who make use of it, 'hoangnan.' It grows in the mountains which separate the valley of Mekong from southern Tonquin, and is a vine whose bark, in which the active principle exists, is a violent poison. Its use was communicated by a native convert to the missionaries. M. Lesserteur, formerly a missionary in Tonquin, and now director of the seminary of foreign missions, has published a pamphlet, in which he recounts numerous cases in which a cure was effected. Dr. F. Barthélemy of Nantes has also made a special study of the drug, which appears to act as an alterative and antispasmodic. It is also under investigation by the medical school of Alfort. Cures of active hydrophobia are claimed for it, and several cases mentioned in detail. It is also said to be an antidote to the venom of serpents, and to relieve cutaneous diseases. While under the effect of the drug, it is said that alcoholic liquor or heating food must be absolutely avoided as liable to induce active poisoning. Altogether, while there may be a valuable medical agent in this new drug, the accounts given of it recall those which heralded the introduction of the notorious South-American 'cundurango.'